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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/577,006	05/22/2000	Yoshitaka Takahashi	2271/46440-B	2446

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EXAMINER

CHU, KIM KWOK

ART UNIT

PAPER NUMBER

2653

DATE MAILED: 08/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/577,006

Applicant(s)

TAKAHASHI ET AL. 

Examiner

Kim-Kwok CHU

Art Unit

2653

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment filed on 5/15/03 (paper 4).
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-14 and 29-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-14 is/are allowed.
- 6) ☒ Claim(s) 29-42 and 44-52 is/are rejected.
- 7) ☒ Claim(s) 43 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☒ Interview Summary (PTO-413) Paper No(s). 5.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other: _____.

Response to Remarks

1. Applicant's Remarks filed on May 15, 2003 (paper 4) have been fully considered.

(a) the facsimile transmitted on February 14, 2001 is not in record of the file. Applicant should submit the copy of the Declaration and Claim for Priority again.

Reissue Applications

2. The reissue oath/declaration filed with this application is defective (see 37 CFR 1.175 and MPEP § 1414) because of the following:

- (a) Applicant does not provide his citizenship;
- (b) Applicant does not provide his post office address; and
- (c) foreign applications are not listed (a "claim" for the benefit of an earlier filing date in a foreign country under 35 U.S.C. 119(a)-(d) must be made in a reissue application).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 29 and 31-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukai (U.S. Patent 4,624,526) in view of Hineno et al. (U.S. Patent 5,428,596).

Tsukai teaches an optical disk apparatus very similar to that of the instant invention. For example, Tsukai teaches the following:

(a) as in claim 29, a light source 11 (Fig. 2);

(b) as in claim 29, an objective lens 13 for focusing light ray flux emitted from the light source 11 on an optical recording medium 14 (Fig. 2);

(c) as in claim 29, a quarter-wave plate 17 located between the light source 11 and the optical recording medium 14 (Fig. 2);

(d) as in claim 29, a flux separating element 16 configured to separate light rays reflected on the optical recording medium 14 from an optical axis of incident light rays (Fig. 2);

(e) as in claim 29, the flux separating element 16 including a crystal (Wollaston prism) with a discontinuous surface disposed in an optical path between the light source 11 and the objective lens 13 (Fig. 2);

(f) as in claim 29, a light-receiving element 15 positioned adjacent the light source 11 and at a front side for detecting a signal from the reflection light rays (Fig. 2);

(g) as in claim 31, the light-emitting source 11 is at a different height from that of the light-receiving element 15 (Fig. 2);

(h) as in claim 32, the flux separating element 16 comprises a prism disposed in the optical path between the light source 11 and the quarter-wave plate 17 (Fig. 2);

(i) as in claim 33, the optical disc apparatus is an optical pickup (Fig. 2);

(j) as in claim 34, an optical disc system comprising the optical disc apparatus (Fig. 2);

(k) as in claim 35, the light source 11 is a semiconductor laser (Fig. 2); and

(1) as in claim 36, an incident plain surface of the flux separating element 16 is not perpendicular to the optical axis (Fig. 2).

However, the embodiment of Tsukai as illustrated in Fig. 2 does not teach the following:

(a) as in claims 29 and 32, the prism 16 is a uniaxial crystal;

(b) as in claim 37, the light source and the light-receiving element are unitarily constructed by combining both of them into one;

(c) as in claim 38, the flux separating element is employed as a window member of the light source; and

(d) as in claim 39, the light source, the light-receiving element, the flux separating element, the quarter-wave plate and the objective lens are mounted unitarily to form a unitary optical pickup portion.

Hineno teaches the following:

(a) a Wollaston prism 11 made of a birefringent material such as a uniaxial crystal (Fig. 3; column 5, lines 29-31).

Tsukai in Fig. 4 teaches the following:

(a) a light source 21 and a light-receiving element 25 are unitarily constructed by combining both of them into one (Fig. 4);

(b) the flux separating element 28 is employed as a window member of the light source (Fig. 4); and

(c) as in claim 39, the light source, the light-receiving element, the flux separating element and the objective lens are mounted unitarily to form a unitary optical pickup portion (Fig. 4).

Although Tsukai does not specify the material of making his Wollaston prism, however, it is well known that the Wollaston prism is made of a uniaxial crystal such as Hineno's.

Hence, for diffracting a returned light beam so that it is off the optical axis of Tsukai's laser source, it would have been obvious to use a Wollaston prism which is made of a uniaxial crystal such as Hineno's, because the uniaxial crystal is a birefringent material which has two refractive indexes for creating two images by diffracting a light beams in different directions.

On the other hand, to reduce the size of Tsukai's optical disk apparatus, optical components next to each other are formed together as a single unit. Regarding the laser source which is very close to the light-receiving element, it would have been obvious to one of ordinary skill in the art to combine these two components together such as Tsukai's integrated laser source and photodetector as illustrated in Fig. 4, because the united laser source and the light-receiving element are in an integrated form

in order to simplify the construction of Tsukai's optical disk apparatus.

Similarly, regarding Tsukai's light source, the light-receiving element, the flux separating element and the objective lens, it would have been obvious to one of ordinary skill in the art to position the flux separating element in front of the laser source as a window member, and then to mount the rest of the optical components such as the objective lens and the quarter-wave plate in a unitarily form such as Tsukai's as illustrated in Fig. 4, because such arrangement can simplify the construction of Tsukai's optical disk apparatus.

5. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukai (U.S. Patent 4,624,526) in view of Hineno et al. (U.S. Patent 5,428,596) and of Lee (U.S. Patent 5,136,152).

Tsukai in view of Hineno teaches an optical pickup very similar to that of the instant invention. However, both Tsukai and Hineno do not teach the following:

(a) as in claim 30, a collimator lens located between the flux separating element and the optical recording medium.

Lee teaches an optical pickup having a collimator lens 850 located between the flux separating element 840 and an optical recording medium 880 (Fig. 8).

A light beam should be parallel before it is focused by an objective lens. Therefore, to guide the light beam toward the objective lens, it would have been obvious to one of the ordinary skill in the art to position a collimator lens such as Lee's in Tsukai's optical head between a light separating means and a recording medium, because the collimator can convert any divergent light beam exited from the light separating means into a collimated beam so that it can be equally focused.

6. Claims 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukai (U.S. Patent 4,624,526) in view of Hineno et al. (U.S. Patent 5,428,596) and of Ando (U.S. Patent 4,804,835).

Tsukai in view of Hineno teaches an optical pickup very similar to that of the instant invention. However, both Tsukai and Hineno do not teach the following:

(a) as in claim 40; the unitary optical pickup portion is accommodated in an actuator movable portion which can be moved both in a tracking direction and in a focusing direction; and

(b) as in claim 41, the light source, the light-receiving element, the flux separating element, the quarter-wave plate and the objective lens are accommodated in an actuator movable portion which can be moved both in a tracking direction and in a focusing direction.

Ando teaches the following:

(a) an unitary optical pickup portion 5 is accommodated in an actuator movable portion 81 which can be moved both in a tracking direction and in a focusing direction (Figs. 1 and 10).

An optical pickup moves across an optical disk so that a light beam can be irradiated and reflected on the disk surface for accessing information. Hence, for focusing and tracking the light beam on information located on the disk's surface, it would have been obvious to one of ordinary skill in the art to use an actuator similar to Ando's so that Tsukai's objective lens can properly focus the light beam in the right track.

7. Claims 42 and 44 have limitations similar to those treated in the above rejection, and are met by the references as discussed above.

8. Claims 45-48 have limitations similar to those treated in the above rejection, and are met by the references as discussed above. Claims 46 and 47 however also recite the following limitations which are taught by the cited prior art of Tsukai:

(a) as in claim 46, the emitting and detecting directions are at an oblique angle to each other (Fig. 2); and

(b) as in claim 47, the light source and detector are spaced from each other in a direction transverse to both the emitting and the detecting directions (Fig. 2).

9. Claims 49-52 have limitations similar to those treated in the above rejection, and are met by the references as discussed above. Claims 50 and 51 however also recite the following limitations which are taught by the cited prior art of Tsukai:

(a) as in claim 50, the emitting and detecting directions are at an oblique angle to each other (Fig. 2); and

(b) as in claim 51, the light source and detector are spaced from each other in a direction transverse to both the emitting and the detecting directions (Fig. 2).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Koyama (5,293,371) is pertinent because Koyama teaches a uniaxial crystal for separating a light beam into two directions.

Sato (5,132,950) is pertinent because Sato teaches a uniaxial crystal for separating a light beam into two directions.

Allowable Subject Matter

11. Claims 11-14 are allowable over the prior art of record.

12. Claim 43 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is an Examiner's Statement of Reasons for Allowance based on applicant's amendment filed on July 16, 1997:

As in claims 11 and 43, the prior art of record fails to teach or fairly suggest an optical pickup having two pieces of prism consisting of same sort of uniaxial crystal respectively having optical axes intersecting perpendicularly to each other are employed as a flux separating element, such that when a refractive index for ordinary light rays of the prism η_o is larger than a refractive index for extraordinary light rays η_e , an incident angle of the ordinary light rays transmitted through the first prism to the second prism is δ , and a counterclockwise angle from the optical axis of the ordinary light rays is in a plus (+) direction when the value of δ becomes larger than zero, and such that when η_o is larger than η_e , an incident angle of the extraordinary light rays

transmitted through the first prism to the second prism is δ , and a counterclockwise angle from the optical axis of the extraordinary light rays is in a plus (+) direction when the value of δ becomes smaller than zero ($\delta < 0$).

The features indicated above, in combination with the other elements of the claims, are not anticipated by, nor made obvious over, the prior art of record.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

15. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks Washington, D.C.
20231 Or faxed to:

(703) 872-9314 (for formal communications intended for
entry. Or:

(703) 746-6909, (for informal or draft communications,
please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park
II, 2021 Crystal Drive, Arlington. VA., Sixth Floor
(Receptionist).

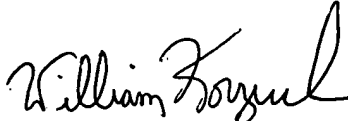
Any inquiry of a general nature or relating to the status of
this application should be directed to the Group receptionist
whose telephone number is (703) 305-4700.

Any inquiry concerning this communication or earlier
communications from the examiner should be directed to Kim CHU
whose telephone number is (703) 305-3032 between 9:30 am to 6:00
pm, Monday to Friday.

kk 8/11/03

Kim-kwok CHU

Examiner AU2653
August 11, 2003
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